

# PATENT COOPERATION TREATY

**PCT**

## NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner  
US Department of Commerce  
United States Patent and Trademark  
Office, PCT  
2011 South Clark Place Room  
CP2/5C24  
Arlington, VA 22202  
ETATS-UNIS D'AMERIQUE  
in its capacity as elected Office

Date of mailing:

17 May 2001 (17.05.01)

International application No.:

PCT/JP00/07754

Applicant's or agent's file reference:

P00-693

International filing date:

02 November 2000 (02.11.00)

Priority date:

10 November 1999 (10.11.99)

Applicant:

KASAI, Takao et al

1. The designated Office is hereby notified of its election made:



in the demand filed with the International preliminary Examining Authority on:

12 March 2001 (12.03.01)



in a notice effecting later election filed with the International Bureau on:

2. The election



was



was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer:

J. Zahra

Telephone No.: (41-22) 338.83.38

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>P00-693</b>	<b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. <b>PCT/JP 00/ 07754</b>	International filing date (day/month/year) <b>02/11/2000</b>	(Earliest) Priority Date (day/month/year) <b>10/11/1999</b>
Applicant  <b>KAO CORPORATION</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 03 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

## 1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item:

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☐ as suggested by the applicant.

☒ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

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☐ None of the figures.

## INTERNATIONAL SEARCH REPORT

International Application No

JP 00/07754

**A. CLASSIFICATION OF SUBJECT MATTER**  
 IPC 7 A61F13/494

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A61F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 4 743 246 A (LAWSON MICHAEL I) 10 May 1988 (1988-05-10) column 4, line 6 - line 35; figures ---	1-7
Y	EP 0 264 238 A (PROCTER & GAMBLE) 20 April 1988 (1988-04-20) column 5, line 27 - line 45; figures ---	1-7
Y	US 4 015 604 A (CSILLAG CHARLES) 5 April 1977 (1977-04-05) claims; figures ---	4
A	US 4 200 103 A (BLACK ADAM R ET AL) 29 April 1980 (1980-04-29) claims; figures --- -/--	1,3,4,6, 7

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

\* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

\*G\* document member of the same patent family

Date of the actual completion of the international search

31 January 2001

Date of mailing of the international search report

13/02/2001

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
 NL - 2280 HV Rijswijk  
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
 Fax: (+31-70) 340-3016

Authorized officer

Douskas, K

## INTERNATIONAL SEARCH REPORT

International Application No

JP 00/07754

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 762 642 A (COLES PETER ET AL) 9 June 1998 (1998-06-09) claims; figures -----	1,4
A	US H1746 H (MARSHALL III ROBERT E LEE ET AL) 4 August 1998 (1998-08-04) claims; figures -----	1

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

JP 00/07754

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 4743246	A	10-05-1988	US 4695278 A	22-09-1987
			AT 54048 T	15-07-1990
			AU 579080 B	10-11-1988
			AU 6369186 A	16-04-1987
			CA 1311879 A	29-12-1992
			DE 3672195 D	02-08-1990
			DK 481986 A	12-04-1987
			EG 17945 A	30-03-1991
			EP 0219326 A	22-04-1987
			FI 864098 A,B,	12-04-1987
			GB 2181336 A,B	23-04-1987
			GR 3000768 T	10-10-1991
			HK 53592 A	30-07-1992
			IE 59004 B	15-12-1993
			JP 6093901 B	24-11-1994
			JP 62250201 A	31-10-1987
			KR 9408959 B	28-09-1994
			MX 161320 A	10-09-1990
			NZ 217887 A	26-07-1995
			PH 23270 A	23-06-1989
			PT 83496 A,B	01-11-1986
			SG 52392 G	24-07-1992
EP 0264238	A	20-04-1988	US 4738677 A	19-04-1988
			AT 67656 T	15-10-1991
			AU 613879 B	15-08-1991
			AU 7950387 A	14-04-1988
			BR 8705462 A	24-05-1988
			CA 1334319 A	14-02-1995
			DE 3773323 A	31-10-1991
			DK 530487 A	11-04-1988
			EG 18192 A	30-08-1992
			ES 2024519 T	01-04-2000
			FI 874458 A,B,	11-04-1988
			GR 3032645 T	30-06-2000
			GR 3002791 T	25-01-1993
			HK 47094 A	20-05-1994
			IE 60690 B	10-08-1994
			JP 2517622 B	24-07-1996
			JP 63182402 A	27-07-1988
			KR 9609237 B	16-07-1996
			MX 170748 B	13-09-1993
			NZ 222114 A	26-07-1995
			NZ 238532 A	26-07-1995
			NZ 247474 A	26-07-1995
			PT 85889 A,B	01-11-1987
			TR 23295 A	14-09-1989
			US 4816025 A	28-03-1989
			US 4938755 A	03-07-1990
US 4015604	A	05-04-1977	AR 216758 A	31-01-1980
			AT 970076 A	15-05-1981
			AU 504756 B	25-10-1979
			AU 2155277 A	27-07-1978
			BE 850009 A	30-06-1977
			BR 7701456 A	08-11-1977
			DE 2658606 A	06-10-1977
			ES 236462 Y	16-11-1978

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

JP 00/07754

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 4015604	A		FR 2355513 A	20-01-1978
			GR 60785 A	28-08-1978
			IN 145028 A	12-08-1978
			IT 1073165 B	13-04-1985
			JP 1263674 C	16-05-1985
			JP 52118358 A	04-10-1977
			JP 59039134 B	21-09-1984
			LU 76767 A	30-06-1977
			NL 7700489 A	27-09-1977
			NZ 183124 A	11-01-1979
			PH 13089 A	23-11-1979
			PT 66051 A, B	01-02-1977
			ZA 7607658 A	30-08-1978
			ZM 1977 A	21-11-1977
US 4200103	A	29-04-1980	AR 215798 A	31-10-1979
			AU 525100 B	21-10-1982
			AU 4638279 A	01-11-1979
			BE 875942 A	29-10-1979
			BR 7902537 A	30-10-1979
			CA 1118955 A	02-03-1982
			DE 2917181 A	08-11-1979
			DK 175879 A	29-10-1979
			ES 250488 U	01-09-1980
			FI 791375 A	29-10-1979
			FR 2424021 A	23-11-1979
			GB 2019727 A, B	07-11-1979
			IE 48215 B	31-10-1984
			IN 148710 A	23-05-1981
			IT 1120415 B	26-03-1986
			JP 1485696 C	14-03-1989
			JP 54147695 A	19-11-1979
			JP 62000703 B	09-01-1987
			LU 81197 A	10-09-1979
			MX 150172 A	29-03-1984
			NL 7903305 A	30-10-1979
			NO 791422 A	30-10-1979
			NZ 190234 A	23-01-1981
			PH 16495 A	28-10-1983
			PT 69557 A	01-05-1979
			SE 7903681 A	29-10-1979
			ZA 7902041 A	26-11-1980
US 5762642	A	09-06-1998	EP 0626158 A	30-11-1994
			AU 695473 B	13-08-1998
			AU 6942094 A	20-12-1994
			CA 2163079 A	08-12-1994
			EP 0746296 A	11-12-1996
			JP 8510664 T	12-11-1996
US H1746	H	04-08-1998	WO 9427538 A	08-12-1994
			AU 6776394 A	20-12-1994
			AU 7314198 A	20-08-1998
			CA 2163194 A	08-12-1994
			EP 0699063 A	06-03-1996
			JP 8510665 T	12-11-1996
			NZ 266321 A	24-11-1997
			WO 9427539 A	08-12-1994

# PATENT COOPERATION TREATY

PCT

## NOTICE INFORMING THE APPLICANT OF THE COMMUNICATION OF THE INTERNATIONAL APPLICATION TO THE DESIGNATED OFFICES

(PCT Rule 47.1(c), first sentence)

From the INTERNATIONAL BUREAU

To:

HATORI, Osamu  
Akasaka HKN Building. 6F  
8-6, Akasaka 1-chome  
Minato-ku  
Tokyo 107-0052  
JAPON



Date of mailing (day/month/year) 17 May 2001 (17.05.01)		
Applicant's or agent's file reference P00-693		IMPORTANT NOTICE
International application No. PCT/JP00/07754	International filing date (day/month/year) 02 November 2000 (02.11.00)	Priority date (day/month/year) 10 November 1999 (10.11.99)
Applicant KAO CORPORATION et al		

1. Notice is hereby given that the International Bureau has communicated, as provided in Article 20, the international application to the following designated Offices on the date indicated above as the date of mailing of this Notice:  
KR,US

In accordance with Rule 47.1(c), third sentence, those Offices will accept the present Notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

2. The following designated Offices have waived the requirement for such a communication at this time:  
CN,EP

The communication will be made to those Offices only upon their request. Furthermore, those Offices do not require the applicant to furnish a copy of the international application (Rule 49.1(a-bis)).

3. Enclosed with this Notice is a copy of the international application as published by the International Bureau on  
17 May 2001 (17.05.01) under No. WO 01/34083

### REMINDER REGARDING CHAPTER II (Article 31(2)(a) and Rule 54.2)

If the applicant wishes to postpone entry into the national phase until 30 months (or later in some Offices) from the priority date, a demand for international preliminary examination must be filed with the competent International Preliminary Examining Authority before the expiration of 19 months from the priority date.

It is the applicant's sole responsibility to monitor the 19-month time limit.

Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination.

### REMINDER REGARDING ENTRY INTO THE NATIONAL PHASE (Article 22 or 39(1))

If the applicant wishes to proceed with the international application in the national phase, he must, within 20 months or 30 months, or later in some Offices, perform the acts referred to therein before each designated or elected Office.

For further important information on the time limits and acts to be performed for entering the national phase, see the Annex to Form PCT/IB/301 (Notification of Receipt of Record Copy) and Volume II of the PCT Applicant's Guide.

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. (41-22) 740.14.35	Authorized officer J. Zahra Telephone No. (41-22) 338.83.38
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## PATENT COOPERATION TREATY

PCT

NOTIFICATION CONCERNING  
SUBMISSION OR TRANSMITTAL  
OF PRIORITY DOCUMENT

(PCT Administrative Instructions, Section 411)

From the INTERNATIONAL BUREAU

To:

HATORI, Osamu  
Akasaka HKN Building. 6F  
8-6, Akasaka 1-chome  
Minato-ku  
Tokyo 107-0052  
JAPON



Date of mailing (day/month/year) 22 January 2001 (22.01.01)	
Applicant's or agent's file reference P00-693	<b>IMPORTANT NOTIFICATION</b>
International application No. PCT/JP00/07754	International filing date (day/month/year) 02 November 2000 (02.11.00)
International publication date (day/month/year) Not yet published	Priority date (day/month/year) 10 November 1999 (10.11.99)
Applicant KAO CORPORATION et al	

1. The applicant is hereby notified of the date of receipt (except where the letters "NR" appear in the right-hand column) by the International Bureau of the priority document(s) relating to the earlier application(s) indicated below. Unless otherwise indicated by an asterisk appearing next to a date of receipt, or by the letters "NR", in the right-hand column, the priority document concerned was submitted or transmitted to the International Bureau in compliance with Rule 17.1(a) or (b).
2. This updates and replaces any previously issued notification concerning submission or transmittal of priority documents.
3. An asterisk(\*) appearing next to a date of receipt, in the right-hand column, denotes a priority document submitted or transmitted to the International Bureau but not in compliance with Rule 17.1(a) or (b). In such a case, the attention of the applicant is directed to Rule 17.1(c) which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.
4. The letters "NR" appearing in the right-hand column denote a priority document which was not received by the International Bureau or which the applicant did not request the receiving Office to prepare and transmit to the International Bureau, as provided by Rule 17.1(a) or (b), respectively. In such a case, the attention of the applicant is directed to Rule 17.1(c) which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.

<u>Priority date</u>	<u>Priority application No.</u>	<u>Country or regional Office or PCT receiving Office</u>	<u>Date of receipt of priority document</u>
10 Nove 1999 (10.11.99)	11/320340	JP	22 Dece 2000 (22.12.00)

The International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland

Facsimile No. (41-22) 740.14.35

Authorized officer

Somsak Thiphrakesone

Telephone No. (41-22) 338.83.38



# PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

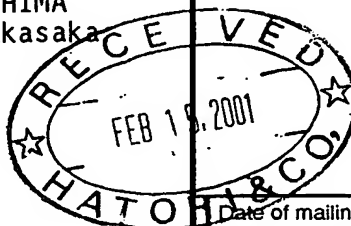
## PCT

To:

7653 Patent Attorney HATORI Osamu  
10129 Patent Attorney MATSUSHIMA  
AKASAKA HKN BLDG. 6F, 8-6, Akasaka  
1-chome  
Minato-ku, TOKYO 107-0052  
JAPAN

NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL SEARCH REPORT  
OR THE DECLARATION

(PCT Rule 44.1)



Date of mailing  
(day/month/year)

13/02/2001

Applicant's or agent's file reference

P00-693

**FOR FURTHER ACTION**

See paragraphs 1 and 4 below

International application No.

PCT/JP 00/07754

International filing date

(day/month/year)

02/11/2000

Applicant

KAO CORPORATION

1. ☒ The applicant is hereby notified that the International Search Report has been established and is transmitted herewith.

**Filing of amendments and statement under Article 19:**

The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

**When?** The time limit for filing such amendments is normally 2 months from the date of transmittal of the International Search Report; however, for more details, see the notes on the accompanying sheet.

**Where?** Directly to the International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland  
Facsimile No.: (41-22) 740.14.35

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no International Search Report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.

3. ☐ **With regard to the protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Further action(s):** The applicant is reminded of the following:

Shortly after **18 months** from the priority date, the international application will be published by the International Bureau.

If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90b/s.1 and 90b/s.3, respectively, before the completion of the technical preparations for international publication.

Within **19 months** from the priority date, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later).

Within **20 months** from the priority date, the applicant must perform the prescribed acts for entry into the national phase before all designated Offices which have not been elected in the demand or in a later election within 19 months from the priority date or could not be elected because they are not bound by Chapter II.

Name and mailing address of the International Searching Authority



European Patent Office, P.B. 5818 Patentlaan 2  
NL-2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Alicja Van der Heijden

These Notes are intended to give the basic instructions concerning the filing of amendments under article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the PCT Applicant's Guide, a publication of WIPO.

In these Notes, "Article", "Rule", and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions respectively.

## INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only.

### What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

### When?

Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

### Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

### How?

Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Administrative Instructions, Section 205(b)).

The amendments must be made in the language in which the international application is to be published.

### What documents must/may accompany the amendments?

#### Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

The letter must indicate the differences between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped), whether

- (i) the claim is unchanged;
- (ii) the claim is cancelled;
- (iii) the claim is new;
- (iv) the claim replaces one or more claims as filed;
- (v) the claim is the result of the division of a claim as filed.

The following examples illustrate the manner in which amendments must be explained in the accompanying letter:

1. [Where originally there were 48 claims and after amendment of some claims there are 51]:  
"Claims 1 to 29, 31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers; claims 30, 33 and 36 unchanged; new claims 49 to 51 added."
2. [Where originally there were 15 claims and after amendment of all claims there are 11]:  
"Claims 1 to 15 replaced by amended claims 1 to 11."
3. [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims]:  
"Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." or  
"Claims 7 to 13 cancelled; new claims 15, 16 and 17 added; all other claims unchanged."
4. [Where various kinds of amendments are made]:  
"Claims 1-10 unchanged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

**"Statement under article 19(1)" (Rule 46.4)**

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

It must be in the language in which the international application is to be published.

It must be brief, not exceeding 500 words if in English or if translated into English.

It should not be confused with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words "Statement under Article 19(1)."

It may not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Reference to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

**Consequence if a demand for international preliminary examination has already been filed**

If, at the time of filing any amendments under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the same time of filing the amendments with the International Bureau, also file a copy of such amendments with the International Preliminary Examining Authority (see Rule 62.2(a), first sentence).

**Consequence with regard to translation of the international application for entry into the national phase**

The applicant's attention is drawn to the fact that, where upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Offices, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see Volume II of the PCT Applicant's Guide.

# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>P00-693</b>	<b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. <b>PCT/JP 00/ 07754</b>	International filing date (day/month/year) <b>02/11/2000</b>	(Earliest) Priority Date (day/month/year) <b>10/11/1999</b>
Applicant  <b>KAO CORPORATION</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 03 sheets.  
☒ It is also accompanied by a copy of each prior art document cited in this report.

**1. Basis of the report**

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).
- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :
- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

**4. With regard to the title,**

- ☒ the text is approved as submitted by the applicant.
- ☐ the text has been established by this Authority to read as follows:

**5. With regard to the abstract,**

- ☒ the text is approved as submitted by the applicant.
- ☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

**6. The figure of the drawings to be published with the abstract is Figure No.**

- ☐ as suggested by the applicant.
- ☒ because the applicant failed to suggest a figure.
- ☐ because this figure better characterizes the invention.
- 7  
☐ None of the figures.

## INTERNATIONAL SEARCH REPORT

International Application No

JP 00/07754

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 A61F13/494

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A61F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 4 743 246 A (LAWSON MICHAEL I) 10 May 1988 (1988-05-10) column 4, line 6 - line 35; figures ---	1-7
Y	EP 0 264 238 A (PROCTER & GAMBLE) 20 April 1988 (1988-04-20) column 5, line 27 - line 45; figures ---	1-7
Y	US 4 015 604 A (CSILLAG CHARLES) 5 April 1977 (1977-04-05) claims; figures ---	4
A	US 4 200 103 A (BLACK ADAM R ET AL) 29 April 1980 (1980-04-29) claims; figures --- -/--	1,3,4,6, 7

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

## \* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

\*G\* document member of the same patent family

Date of the actual completion of the international search

31 January 2001

Date of mailing of the international search report

13/02/2001

Name and mailing address of the ISA

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Authorized officer

Douskas, K

## INTERNATIONAL SEARCH REPORT

International Application No

JP 00/07754

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 762 642 A (COLES PETER ET AL) 9 June 1998 (1998-06-09) claims; figures ---	1, 4
A	US H1746 H (MARSHALL III ROBERT E LEE ET AL) 4 August 1998 (1998-08-04) claims; figures -----	1

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

JP 00/07754

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
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			AU 6369186 A	16-04-1987
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## INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

JP 00/07754

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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		EP 0699063 A	06-03-1996
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		NZ 266321 A	24-11-1997
		WO 9427539 A	08-12-1994



# PATENT COOPERATION TREATY

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

HATORI, Osamu  
Patent Attorney  
AKASAKA HKN BLDG. 6F,  
8-6, Akasaka 1-chome,  
Minato-ku  
Tokyo 107-0052  
JAPON



## PCT

NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT  
(PCT Rule 71.1)

Date of mailing (day/month/year)	10.12.2001
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Applicant's or agent's file reference P00-693	<b>IMPORTANT NOTIFICATION</b>
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International application No. PCT/JP00/07754	International filing date (day/month/year) 02/11/2000	Priority date (day/month/year) 10/11/1999
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Applicant KAO CORPORATION et al.
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1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

#### 4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/	Authorized officer
---------------------------------------	--------------------

European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Marra, E  Tel. +49 89 2399-7235
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# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>P00-693</b>	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. <b>PCT/JP00/07754</b>	International filing date ( <i>day/month/year</i> ) <b>02/11/2000</b>	Priority date ( <i>day/month/year</i> ) <b>10/11/1999</b>
International Patent Classification (IPC) or national classification and IPC <b>A61F13/494</b>		
Applicant <b>KAO CORPORATION et al.</b>		


1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
  
2. This REPORT consists of a total of 8 sheets, including this cover sheet.
 

☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of    sheets.

3. This report contains indications relating to the following items:

- I    ☒ Basis of the report
- II   ☐ Priority
- III ☒ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV   ☐ Lack of unity of invention
- V    ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI   ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand  <b>12/03/2001</b>	Date of completion of this report  <b>10.12.2001</b>
Name and mailing address of the International preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer  <b>Martinez, C</b>  Telephone No. +49 89 2399 7510



# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/JP00/07754

## I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, pages:**

1-16 as originally filed

**Claims, No.:**

1-7 as originally filed

**Drawings, sheets:**

1/3-3/3 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/JP00/07754

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application.

☒ claims Nos. 7.

because:

☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (*specify*):

☒ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. 7 are so unclear that no meaningful opinion could be formed (*specify*):  
**see separate sheet**

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

☐ no international search report has been established for the said claims Nos. .

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

☐ the written form has not been furnished or does not comply with the standard.

☐ the computer readable form has not been furnished or does not comply with the standard.

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)

Yes: Claims 4-5

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/JP00/07754

	No:	Claims	1-3, 6
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-6
Industrial applicability (IA)	Yes:	Claims	1-6
	No:	Claims	

**2. Citations and explanations**

**see separate sheet**

**VII. Certain defects in the international application**

The following defects in the form or contents of the international application have been noted:

**see separate sheet**

**VIII. Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

**see separate sheet**

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/JP00/07754

Reference is made to the following documents:

D1: EP-B-0263720, family member of document JP-63-182401 cited in the application on page 1, lines 11-12

D2: EP-A-0264238

D3: US-A-4743246

**Re Item III**

In view of the clarity objections raised against claim 7 (see Item VIII), no meaningful examination regarding novelty and inventive step of claim 7 could be carried out.

**Re Item V**

The present application does not meet the requirements of Articles 33(2) and (3) PCT, the reasons being as follows:

**Claim 1**

The way claim 1 is worded (see item VIII), the absorbent article described in document D1 also falls within the scope of claim 1, its subject-matter does therefore not appear to be novel in the sense of Article 33(2) PCT, the reasons being as follows:

Document D1, which is considered to represent the most relevant state of the art, discloses an absorbent article including a liquid-permeable topsheet (28), a liquid-impermeable backsheet (42) and a liquid-retentive absorbent core (44) interposed between said topsheet and said backsheet, said absorbent article being substantially vertically elongated and having a barrier cuff (62), i.e. an upstanding gather (D1: col.4, l.54 to col.5, l.15 + Fig. 1-2), said topsheet having an attachment means (88) in a linear shape (D1: col.14, l.42-49) which prevents liquid migration within said topsheet (D1: col.5, l.52 to col.6, l.6 + col.14, l.39 to col.15, l.4 + col.18, l.7-16 + Fig.2), said attachment means (88) being located at an area outside the periphery of said absorbent core and being formed independent of a seal means (78) (D1: Fig.2), which is a joined section between said topsheet and a sheet material for forming said barrier cuff (62) (D1: col.6, l.49-57).

Said attachment means (88) acts as a so called "shut-off region" since it prevents wicking along said topsheet (see D1: col.18, l.8-13 + col.22, l.17-24) and; as can be

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/JP00/07754

clearly interpreted from figure 2 and from the passage in column 6, lines 49-57, said seal means (78) acts as a join between said topsheet and said proximal edge (64) of said barrier cuff (62) (i.e. between said topsheet and a sheet material for forming said upstanding gather).

Claim 1 appears therefore to lack novelty over document D1.

It should be noted that documents D2 and D3 are very similar to document D1 and that claim 1 also appears to lack novelty over document D2 for the same reasons as mentioned above (D2: col.5, l.28 to col.6, l.38 + col.8, l.50-55 + Fig.1-2). Regarding document D3, it does not disclose explicitly that the adhesive (88) acts as a "shut-off region" preventing liquid migration within said topsheet, unlike documents D 1 and D2 (D3: col.4, l.6-61 + Fig.1-2).

**Dependent claims 2 to 6**

The additional features of dependent claims 2 to 6 are either already known from documents D1 or D2 (see for example, D1: col.10, l.18-24 + col.14, l.42-49 + col.22, l.17-24 + Fig.3 and D2: Fig.3) or come within the scope of the customary practice followed by persons skilled in the art as they relate to constructional details of said absorbent article.

**Re Item VII**

Reference signs in parentheses are not inserted in the claims (Rule 6.2(b) PCT).

According to Rule 6.3(b) PCT, the independent claims should have been drafted in the two-part form, the features already known from document D1 should have been disclosed in the preamble of the claim and the new features in the characterising portion, preceded by the expression "**characterised in that**".

**Re Item VIII**

The present application does not meet the requirements of Article 6 PCT, because the subject-matter of the following claims is not clear.

**Claim 1**

The following feature: "the liquid shut-off region is formed independent of a joined section between said topsheet and a sheet material for forming said upstanding gather" is very imprecise and not even clear in the light of the description (see p.6, l.10-23). It is also questionable whether this feature relates to a process step or not (due to the use of the verb "formed"), in which case it would not even be allowable in the product claim1.

As the definition of the expression "the liquid shut-off region is formed independent of a joined section" given in the description (see p.6, l.10-23) can be understood, the embodiments shown on Fig. 6 and 7 do not appear to fall within the scope of claim 1, the reasons being as follows:

From the description (see p.6, l.10-23), "the liquid shut-off region is formed independent of a joined section" seems to mean that the "liquid shut-off region" and the so called "joined section S" should not be overlapped in the sectional direction, indicated by an arrow P in Fig.4, or in the horizontal direction, indicated by an arrow Q in Fig.4. In the embodiments shown on Fig. 6 and 7, the joined section between the topsheet and the upstanding gather represented by the first adhesive (7a) (see p.11, l.1-4) appears to be overlapping with the liquid shut-off region (21C') in the sectional direction as well as in the horizontal direction as defined in Fig.4.

In view of claim 6 which further specifies that said article does not have said upstanding gather at both or one of the longitudinal end portions of said article, the possible position(s) of said upstanding gather in the article should have been specified in claim 1 (see p.12, l.1-9).

The use of the word "substantially" in claim 1 should have been avoided (see PCT International Preliminary Examination Guidelines, Ch. III-4.5a, PCT Gazette Special Issue dated 29 October 1998).

**Claim 7**

The method steps specified in claim 7, i.e. (1) forming said liquid shut-off region at said topsheet and (2) arranging said topsheet at a predetermined location of said absorbent article, are not precisely defined. In particular, the expression "at a predetermined



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/JP00/07754

location of said absorbent article" is very vague.

Furthermore, the international application shall relate to one invention only or to a group of inventions so linked as to form a single general inventive concept (Rule 13.1 PCT). It is therefore essential that a single general inventive concept link the claims in the various categories (see PCT International Preliminary Examination Guidelines, Ch. III-7.3, PCT Gazette Special Issue dated 29 October 1998). Claims 1 and 7 should therefore disclose corresponding features. This requirement is not satisfied in the present case ; for example, claim 7 does not specify that said liquid shut-off region is located at an area outside the periphery of said absorbent article and is formed independent of a joined section between said topsheet and a sheet material for forming said upstanding gather (as defined in the description on p.6, l.10-23).

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
17 May 2001 (17.05.2001)

PCT

(10) International Publication Number  
**WO 01/34083 A1**

(51) International Patent Classification<sup>7</sup>: **A61F 13/494**

(21) International Application Number: **PCT/JP00/07754**

(22) International Filing Date:  
2 November 2000 (02.11.2000)

(25) Filing Language: **English**

(26) Publication Language: **English**

(30) Priority Data:  
11/320340 10 November 1999 (10.11.1999) **JP**

(71) Applicant (for all designated States except US): **KAO CORPORATION [JP/JP]**; 14-10, Nihonbashi Kayaba-cho 1-chome, Chuo-ku, Tokyo 103-8210 (JP).

(72) Inventors; and

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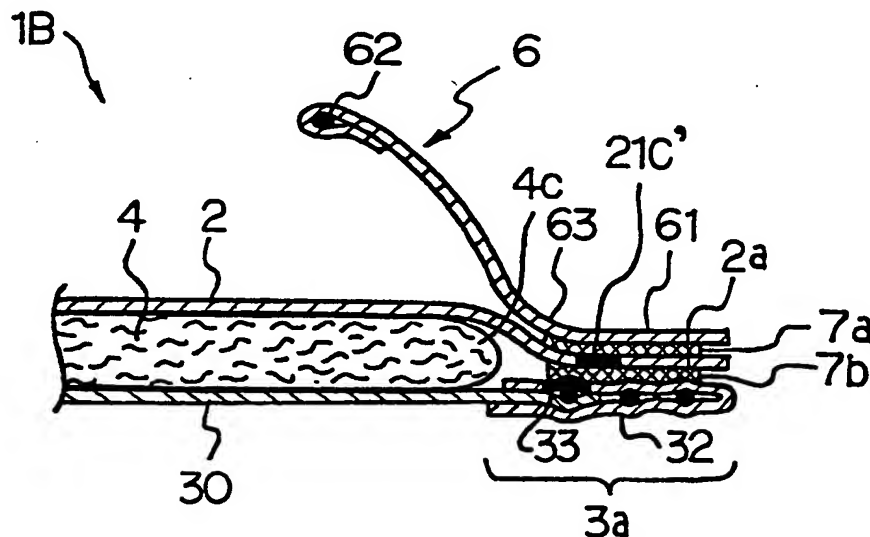
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(54) Title: **ABSORBENT ARTICLE**



(57) Abstract: An absorbent article comprises a liquid-permeable topsheet, a liquid-impermeable backsheet and a liquid-retentive absorbent core interposed between the topsheet and the backsheet. The absorbent article is substantially vertically elongated and has an upstanding gather. The topsheet has a liquid shut-off region in a line shape and adapted to prohibit migration of a liquid in the topsheet. The liquid shut-off region is formed at a region outside a peripheral edge portion but other than a joined section between the topsheet and a sheet material for forming the upstanding gather.

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## DESCRIPTION

### ABSORBENT ARTICLE

#### TECHNICAL FIELD

The present invention relates to an absorbent article such as a disposable diaper which is excellent in anti-leak properties.

#### BACKGROUND ART

In a conventional disposable diaper, it sometimes occurs that a discharged body liquid migrates through the interior of a topsheet under the effect of capillary action and reaches a peripheral edge portion with a result of leakage therefrom. As a technique for preventing the leak of a liquid from the opposite side edge portions in the longitudinal direction of the diaper, Japanese Patent Application Laid-open No. 63-182401 proposes a diaper in which a sheet material for forming an upstanding gather and a topsheet are joined together at an upper part of an absorbent core and the leak of a body liquid from opposite side edge portions of the diaper is restrained by utilizing the joined section (or junction).

However, since the topsheet of this diaper is designed such that its end portion does not reach an end portion of the product and joining means for joining the upstanding gather serves as leak restraining means, the processing conditions for joining a plurality of sheets are limited. Moreover, in the case where an adhesive agent is used as means for joining the upstanding gather and the topsheet together, in the case where the topsheet is a bulky nonwoven fabric, a large amount of adhesive agent must be used for the adhesion thereof and for the restraint of leak thereof, thus resulting in problems of impairment of flexibility and increase in manufacturing cost. Moreover, in the case where a continuous production is to be performed, the topsheet must be arranged intermittently in a direction of the flow of a raw fabric, thus resulting in serious deterioration in productivity. In addition, the anti-leak effect is not sufficient, as well.

#### DISCLOSURE OF THE INVENTION

It is, therefore, an object of the present invention to provide an absorbent article which is good in workability (or processibility), which can exhibit a satisfactory anti-leak effect even when a bulky topsheet is employed, which is good in productivity and which is low in manufacturing cost.

- 5 The present invention has achieved the above object by providing an absorbent article including a liquid-permeable topsheet, a liquid-impermeable backsheet and a liquid-retentive absorbent core interposed between the topsheet and the backsheet, the absorbent article being substantially vertically elongated and having an upstanding gather,
- 10 wherein the topsheet has a liquid shut-off region in a linear shape which prevents liquid migration within the topsheet, and the liquid shut-off region is located at an area outside the periphery of the absorbent core and is formed independent of a joined section between the topsheet and a sheet material for forming the upstanding gather..

#### BRIEF DESCRIPTION OF THE DRAWINGS

- 15 FIG. 1 is a plan view, when viewed from a topsheet side, showing one state of a disposable diaper according to one embodiment of the present invention, in which an elastic member is in a stretched position;
- FIG. 2 is a sectional view taken on line X-X of FIG. 1;
- FIG. 3 is a sectional view taken on line Y-Y of FIG. 1;
- 20 FIG. 4 is an explanatory view for explaining the location where a liquid shut-off region is formed;
- FIG. 5(a) is an illustration showing one example of a method for forming a liquid shut-off region, and FIG. 5(b) is an illustration showing another example thereof;
- FIG. 6 is a sectional view (corresponding to FIG. 3) showing a disposable diaper according to another embodiment of the present invention; and
- 25 FIG. 7 is a sectional view (corresponding to FIG. 3) showing a disposable diaper according to a further embodiment of the present invention.

#### BEST MODE FOR CARRYING OUT THE INVENTION

- 30 An preferred embodiment of the present invention will be described hereinafter. A disposable diaper 1 as an absorbent article in this embodiment is a so-called flat-type

disposable diaper including a liquid-permeable topsheet 2, a liquid-impermeable backsheet 3 and a liquid-retentive absorbent core 4 interposed between the topsheet 2 and the backsheet 3, the disposable diaper 1 being substantially vertically elongated and having a pair of left and right fastening tapes 5, 5 at opposite side edge portions of its back side B.

The topsheet 2 and the backsheet 3 each have a vertically elongated configuration and joined together at a peripheral edge portion extending outward beyond the absorbent core 4. The absorbent core 4 has a vertically elongated configuration and it is fixedly sandwiched between the topsheet 2 and the backsheet 3. Opposite end edges 2a, 2b of the topsheet 2 in the longitudinal direction of the diaper 1 and opposite left and right side edges 2c, 2c of the topsheet 2 in the longitudinal direction of the diaper 1 are extended to opposite end edges 1a, 1b and opposite side edges 1c, 1c of the diaper 1, respectively. On opposite side regions in the longitudinal direction of the diaper 1, sheet materials 61, 61 for forming upstanding gathers are arranged to form a pair of left and right upstanding gathers 6, 6.

As shown in FIG. 3, the sheet material 61 for forming the upstanding gather is disposed inward of the diaper from each side edge in the longitudinal direction of the diaper. An elastic member 62 is fixed, in its stretched state, to a free end portion 60 on the widthwise center side of the disposable diaper 1 along an end edge of the free end portion 60. The sheet material 61 is secured to an upper part of each side portion 4c of the absorbent core 4 by thermal-fusing or adhesive agent. By the joining of the sheet material 61 to the upper part of each side portion, a basal end 63 of the upstanding gather 6 is formed. Each sheet material 61 extends outward beyond each side edge portion 4c in the longitudinal direction of the absorbent core 4 so that a side edge 61c, which is located on the other side of the side edge portion forming the free end portion 60, is located at the side edge 1c of the diaper 1. The sheet material 61 is in intimate contact with the topsheet 2 at its extended section. A plurality of elastic members 64, 64, as shown in FIG. 3, are fixedly arranged, in their stretched states and in parallel with the elastic member 62, between the elastic member 62 and the basal end 63 in each sheet 61.

Waist portion elastic members 81, 81 for forming waist gathers are disposed at opposite end portions in the longitudinal direction of the disposable diaper 1 but the upstanding gathers are not formed thereon.

5 The topsheet 2 of the disposable diaper 1 has a liquid shut-off region 21 in a linear shape which prevents liquid migration within the topsheet 2. The expression "in a linear shape" used herein refers to a line effective for restraining the penetration of a body liquid but it does not necessarily mean that the seal lines, etc. are continuously formed without interruption. For example, if intermittent seal lines placed one upon another and arranged in array can prohibit the migration of a body liquid within the  
10 topsheet 2, this arrangement can be said as "in a linear shape". The concept of the expression "in a linear shape" includes not only a straight-line shape but also a curved-line shape and a bent-line shape. The width of the line is preferably about 0.5 to 15 mm. The liquid shut-off regions 21 are located on the opposite longitudinal end portions and the opposite side portions of the diaper 1. The liquid shut-off regions  
15 21A, 21B located on the longitudinal end portions, respectively, are in a linear shape over the widthwise direction of the diaper 1, whereas the liquid shut-off regions 21C, 21C located on the side portions, respectively, are in a linear shape over the longitudinal direction of the diaper 1.

20 More specifically, the liquid shut-off regions 21A, 21B of the opposite end portions in the longitudinal direction of the diaper 1 are formed over a region between the opposite side edges of the absorbent core 4 along the opposite end edges of the absorbent core 4, whereas the opposite left and right liquid shut-off regions 21C, 21C are formed over a region between the opposite end edges of the absorbent core 4 along the opposite left and right side edges of the absorbent core 4. In the case where the liquid shut-off  
25 regions 21A, 21B are formed on the regions outside the end edges in the longitudinal direction of the absorbent core 4 (the same direction as the longitudinal direction of the absorbent article), the lengths L1 (only one is shown) of the liquid shut-off regions 21A, 21B are preferably larger than 100% of the length L2 (only one is shown) of the opposite end edges of the absorbent core 4 and terminated in the product. In the case  
30 where the liquid shut-off regions 21C, 21C are formed on the regions outside the side edges in the longitudinal direction of the absorbent core 4, the lengths L3 (only one is

shown) of the liquid shut-off regions 21C, 21C are preferably larger than 100 % of the length L4 (only one is shown) of the opposite side edges of the absorbent core 4 and terminated in the regions inside the opposite ends 1a, 1b in the longitudinal direction of the product.

5 In this embodiment, the liquid shut-off regions 21A, 21B and the liquid shut-off regions 21C, 21C are mutually connected together at areas in the vicinity of the four corner portions of the absorbent core 4. The absorbent core 4 is surrounded with the liquid shut-off region 21 at area outside its peripheral edge portion over the entire periphery. In this embodiment, each liquid shut-off region 21 is generally a straight line.

10 Each liquid shut-off region 21 is formed at a region outside the peripheral edge portion of the absorbent core 4. That is to say, the liquid shut-off regions 21A, 21B are formed at regions outside the opposite end edges in the longitudinal direction of the absorbent core 4, whereas the liquid shut-off regions 21C, 21C are formed at regions outside the opposite left and right side edges in the longitudinal direction of the absorbent core 4.  
15 Owing to this feature, even if a body liquid should migrate through the interior of the topsheet, the body liquid would not leak from the peripheral edge portion of the diaper because it would collide against any or some of the liquid shut-off regions so that further movement of the body liquid is prohibited. That is to say, the leak of a body liquid from the waist portion is prevented by the liquid shut-off regions 21A, 21B and  
20 the leak from the leg areas is likewise prevented by the liquid shut-off regions 21C, 21C.

In the disposable diaper 1 of this embodiment, since the liquid shut-off regions 21A, 21B are formed on the opposite end portions in the longitudinal direction of the diaper over the widthwise direction of the diaper, a similar anti-leak effect to one having a  
25 waist upstanding gather can be obtained nevertheless it has no waist upstanding gather.

As shown in FIGS. 2 and 3, the respective liquid shut-off regions 21 are formed independent of a joined section S between the topsheet 2 and the sheet material 61 for forming the upstanding gather. That is to say, the respective liquid shut-off regions 21 are formed at other regions than a joined section S between the topsheet 2 and the sheet  
30 material 61. The liquid shut-off regions 21 are not formed at the time the sheet

material 6 for forming the upstanding gather is joined to the topsheet 2.

The expression "joined section" between the topsheet and the sheet material for forming the upstanding gather used herein refers to an adhesive layer and a hot-melt layer which are formed between the topsheet and the sheet material for forming the upstanding gather when the topsheet and the sheet material are joined together. As a material for forming the adhesive layer, there can be listed an adhesive agent such as a hot-melt. The hot-melt layer is formed on an interface between the topsheet and the sheet material for forming the upstanding gather by applying a heat-seal, an ultrasonic-seal or the like to the sheet material and the topsheet to melt a part of the sheet material and/or the topsheet. The expression "the liquid shut-off region is formed independent of a joined section" means not only a case that the liquid shut-off region and the "joined section" as defined above are not overlapped with each other when the diaper is viewed in the sectional direction (indicated by an arrow P in FIG. 4), but also a case that the liquid shut-off region and the "joined section" are not overlapped with each other when the diaper is viewed in the horizontal direction (indicated by an arrow Q in FIG. 4). The liquid shut-off region in the present invention includes, for example, those in which the liquid shut-off region as indicated by D and E of FIG. 4 is not overlapped with the joined section S when the absorbent article is viewed not only in a plan view but also in the sectional direction. It also includes, for example, those in which the liquid shut-off region as indicated by F of FIG. 4 is overlapped with the joined section S when the absorbent article is viewed in a plan view but the liquid shut-off region is not overlapped with the joined section S when the absorbent article is viewed in a sectional direction (see FIG. 4) in the widthwise direction thereof. Embodiments for forming the liquid shut-off region independent of the joined section include (1) forming the joined section by using an adhesive while forming the liquid shut-off region by the other means than that of the joined section such as a heat-seal and an ultrasonic-seal, and (2) forming the both by the same means but making the both differ in the position to be formed in the extending direction of the sheet material for forming the upstanding gather. Since the liquid shut-off region is for preventing a body liquid from leaking out due to the liquid migration within the topsheet, it is preferably formed over the entire width dimension of the topsheet. FIG. 4 shows a joined section (adhesive layer) S formed by joining the sheet material 61 for forming the upstanding gather to the



topsheet through an adhesive agent.

By forming the liquid shut-off region 21 to be independent of the joined section between the sheet material 61 and the topsheet 2, the working (or processing) conditions required at the time of joining the sheet material 61 for forming an upstanding gather are not limited, the sheet material 61 can be joined to the topsheet 2 by an appropriate method even in the case where a bulky nonwoven fabric is used for the topsheet 2.

It is preferable that the liquid shut-off region 21 in the present invention be formed independent of a joined section between the topsheet 2 and other sheets (sheet material 61, backsheet 3, etc.).

Accordingly, the diaper 1 can be manufactured economically. The topsheet 2 in this embodiment is not thermally bonded to other sheet materials (the sheet material 61 and the backsheet 3) at the respective liquid shut-off regions 21. The bulky topsheet is a sheet manufactured, for example, by an air-laid, air-through system. It has a basis weight of 20 g/m<sup>2</sup> or more, preferably 25 g/m<sup>2</sup> or more and a thickness of 0.3 mm or more, preferably 0.6 mm or more.

According to this diaper 1, since the opposite end edges 2a, 2b of the topsheet 2 extends to the opposite end edges 1a, 1b of the diaper 1, it is not necessary to intermittently arrange the topsheets 2 in the case where diapers are continuously manufactured with the longitudinal direction of the diaper serving as a flow direction. Moreover, since the opposite side edges 2c, 2c of the topsheet 2 are extended to the opposite side edges 1c, 1c of the diaper 1, it is not necessary to intermittently arrange the topsheets 2 even in the case where the widthwise direction of the diaper serves as a flow direction.

The liquid shut-off region 21 in this embodiment is formed by heat seal.

That is to say, the topsheet 2 is a sheet of nonwoven fabric which comprises a thermally fusible material, more particularly is composed of a thermally fusible synthetic fiber. Each liquid shut-off region 21 is formed by pressing a heat-seal material such as a heat roll against the sheet so as to melt a part of the sheet. In the case where the liquid shut-off region is formed by heat seal, the seal width is preferably 0.2 to 15 mm and particularly preferably 0.5 to 5 mm from the view point of strength, liquid shut-off property and high productivity.

Moreover, in this disposable diaper 1, as shown in FIG. 3, the liquid-permeable topsheet 2, which covers the skin contacting surface (that surface which is faced with the wearer's skin side) of the absorbent core 4, extends outward (outward in the widthwise direction) beyond the basal ends 63 of the upstanding gathers 6 form on the opposite side portions in the longitudinal direction of the diaper, and at least a part of the extended section (the same direction as the widthwise direction of the diaper) of the topsheet 2a extending outward beyond the basal ends is joined to the backsheet through an adhesive agent, not shown. The two liquid shut-off regions 21C are each formed on the extended topsheet 2a which extend outward beyond the basal ends 63 of the upstanding gathers.

In this diaper 1, since the extended section 2a of the liquid-permeable topsheet 2 is present at the back side of that portion of the sheet material 61 for forming an upstanding gather which is located outside the basal end 63 in the widthwise direction, a good moisture absorbing property can be obtained at opposite side portions of the diaper even in the case where a hydrophobic sheet material is used as the sheet material 61 for forming an upstanding gather, thus enabling to prevent the generation of heat rash.

Moreover, in this diaper 1, the sealing between the sheet material 61 and the backsheet 3 at opposite side portions of the diaper is achieved by the adhesive agent for joining the sheet material 61 for forming an upstanding gather and the topsheet 2 together, the liquid shut-off regions 21C formed on the topsheet 2 and the adhesive agent for joining the topsheet 2 and the backsheet 3 together. Owing to this feature, the feeling at the opposite side portions of the diaper is not degraded and the backsheet 3 is not damaged, either.

This diaper 1 can easily be manufactured by preliminarily forming the respective liquid shut-off regions 21 on the topsheet 2 and then arranging the topsheet 2 with the liquid shut-off regions 21 formed thereon at a predetermined location of the diaper 1. This manufacturing method is one embodiment of a method for manufacturing an absorbent article of the present invention. As a method for forming the liquid shut-off regions, the liquid shut-off regions 21A to 21C may all be formed simultaneously using a single heat-seal member or after the liquid shut-off regions 21A, 21B are formed by a single

heat-seal member, the liquid shut-off members 21C, 21C may be formed by another heat-seal member. This order may be reversed. Moreover, the liquid shut-off region 21A and the liquid shut-off region 21B, and both the liquid shut-off regions 21C, 21C may be formed using different heat seal members, respectively. In the case where the liquid shut-off regions are formed by heat-seal, the topsheet may be sandwiched between and pressed by the heat-seal members from the opposite surfaces as shown in FIG. 5(a). It is also accepted that the topsheet 2 is folded back and the folded-back portion 22 is sandwiched between and pressed by the heat seal members from the opposite sides as shown in FIG. 5(b).

The diaper 1 of this embodiment can be manufactured by arranging the topsheet 2 with the liquid shut-off regions 21A, 21B, 21C, 21C formed thereon at a predetermined location in the diaper 1 so that the liquid shut-off regions 21A, 21B, 21C, 21C are arranged at the locations as shown in FIGS. 1 to 3, respectively. By preliminarily forming the liquid shut-off regions 21 on the topsheet 2 and then arranging the topsheet with the liquid shut-off regions 21 formed thereon at a predetermined location as just mentioned, a wide variety of joining methods can selectively be used when the sheet material 61 for forming an upstanding gather is joined to the topsheet 2. Hence, the best joining method can be selected taking into consideration the economical efficiency, etc. By this, the productivity of a diaper is enhanced and an economically efficient manufacture can be obtained. It should be noted that those points, which are not particularly described in this embodiment, are the same as in the conventional method for manufacturing a diaper.

It is necessary that the liquid shut-off regions are formed in such a manner as to be able to prohibit the migration of a body liquid through the interior of the topsheet. In the case where a nonwoven fabric is used for the topsheet and the liquid shut-off regions are formed by heat-sealing the nonwoven fabric, it is preferred that they are processed at a temperature of the melt point (m. p.) of the component fiber of the nonwoven fabric or higher and it is more preferable that they are processed at a temperature of the melt point plus 20 °C or higher. It is also effective to use a fiber of a core-sheath structure as the component fiber in order to maintain the strength of the nonwoven fabric. In that case, it is preferable that a resin having a high melt point is used as the core, a resin

having a low melt point is used as the sheath and they are processed at temperatures equal to or higher than the melt point of the sheath component but lower than the melt point of the core component. For example, in the case where the core fiber is PET and the sheath component is PE, sealing is performed at temperatures equal to or higher than 130 °C at which the sheath component is melted, but lower than 230 °C at which the core component PET is melted.

A nonwoven fabric is preferable as the material for forming the topsheet 2 as mentioned above. As the materials for forming the backsheet 3, the absorbent core 4, the sheet material 61 for forming an upstanding gather, the elastic members 62, 64, 81 and the fastening tape 5, those, which are normally used for a disposable diaper, can be used without any particular limitation. For example, as the sheet material 61 for forming an upstanding gather, there can be used a spunbond, a spunbond/meltblown/ spunbond, a spunbond/meltblown/meltblown/spunbond, an airtrough nonwoven fabric and the like. Particularly preferably, they have hydrophobic properties.

A disposable diaper according to another embodiment of the present invention will be described next. FIGS. 6 and 7 are illustrations, which correspond to FIG. 3, each showing a sectional view in the widthwise direction of a disposable diaper according to another embodiment of the present invention. Those points of the disposable diapers shown in FIGS. 6 and 7, which are not particularly described, are the same as the above-mentioned disposable diaper 1 and the description on the above-mentioned disposable diaper 1 is applicable thereto, where appropriate.

In a disposable diaper 1A shown in FIG. 6, a hydrophobic sheet material 31 is adhesively laminated on that section of the sheet material 30 for forming a backsheet which covers a skin non-contacting side of an absorbent core 4, which extends outward in the widthwise direction from each side edge 4c of the absorbent core 4, and opposite side portions 3a of a backsheet 3 is composed of those sheet materials 30, 31, thereby exhibiting a dual layer structure. An outward extended topsheet 2a from a basal end 63 of an upstanding gather 6 is joined to the opposite side portions 3a exhibiting a dual structure in the backsheet 3. An outward extended backsheet 2a from the basal end 63 of the upstanding gather 6 is formed with a liquid shut-off regions 21C' which is similar

to the liquid shut-off region 21C of the disposable diaper 1. In this disposable diaper 1A, the sealing between the top and bottom surfaces at the opposite side portions of the diaper is achieved by an adhesive agent for joining the sheet material 61 for forming an upstanding gather and the topsheet 2 together, the liquid shut-off region 21C' formed on the topsheet 2, and an adhesive agent 7b for joining the topsheet 2 and the backsheet 3 together. The upstanding gather 6 in this disposable diaper 1A includes only a single elastic member 62. In FIG. 6, reference numeral 8 denotes an elastic member for forming a leg gather.

A disposable diaper 1B shown in FIG. 7 is different from the disposable diaper 1A only in the respect that the former includes, instead of the hydrophobic sheet material 31 in the disposable diaper 1A of FIG. 6, a hydrophilic sheet material 32 having a liquid shut-off region 33 which is similar to the liquid shut-off region 21C'. The opposite side portions 3a of the backsheet 3 in this disposable diaper 1B comprises a sheet material 30 extending outward in the widthwise direction beyond opposite side edges 4c of the absorbent core 4 and the sheet material 32 adhesively laminated on the sheet material 30. According to the disposable diapers 1A, 1B shown in FIGS. 6 and 7, there can be exhibited the similar effect to that of the disposable diaper 1.

The present invention should not be limited to the above embodiments. For example, although a method for forming the liquid shut-off region on the topsheet is preferably a heat-seal, it may be an ultrasonic seal. Or otherwise, the liquid shut-off region may be formed on the topsheet by sufficiently impregnating a thermoplastic resin, a wax, a hot-melt, a foamed body having a closed cell, a resin plasticized by water, a water-absorptive polymer or the like into fiber voids of the nonwoven fabric. Among them, the hot-melt is preferable and particularly preferably a hot-melt having less tackiness (in blending of the hot-melt, the molecular weight of the base resin is high and the blending ratio is high). The coating quantity of the hot-melt is preferably 20 to 100 g/m<sup>2</sup>, and the coating system is preferably in the form of a plane or a bead using a coater. The kinds of usable hot-melt are not particularly limited. A styrene-based hot-melt, an olefin-based hot-melt, a solvent, a viscous agent, an aqueous tacky agent, or the like can be used.

In the above embodiments, although upstanding gathers are not formed on the opposite end portions in the longitudinal direction of the diaper, upstanding gathers may be formed on the both or one end portion in the longitudinal direction in the absorbent article of the present invention. It is also accepted that no upstanding gathers are formed on the opposite side portions in the longitudinal direction of the absorbent article and upstanding gathers are formed only on the both or one end portion. The liquid shut-off regions may be formed only on the peripheral edge portion of the absorbent core in the both side portions or both or one end portion in the longitudinal direction of the absorbent article. The liquid shut-off regions on the topsheet 2 may be joined to other sheets than the sheet for forming an upstanding gather. In the method for manufacturing an absorbent article, the location where the liquid shut-out portions are arranged, is not particularly limited. In the obtained absorbent article, the oozing of a body liquid in the topsheet can be prevented at various locations and the anti-leak effect can be enhanced in various manners. For example, in addition to the arrangement of the liquid shut-off regions located at an area outside the periphery of the absorbent core, sealed portions similar to the liquid shut-off regions may be arranged in a lattice shape over the entire surface of the skin contacting surface of the absorbent core. Aside from the shorts type disposable diaper, the present invention can likewise be applied to a pad of an incontinent person and a sanitary napkin.

#### [Example 1]

##### (1) Formation of Topsheet w/Liquid Shut-off region

A liquid shut-off region having a width of 5 mm was linearly formed on the under-mentioned nonwoven fabric by heat seal [seal temperature (set temperature, the same shall apply hereinafter): 160 °C ] and a topsheet 2A was obtained.

##### Constitution of Nonwoven Fabric

Fiber Composition: fiber of a core-sheath structure whose core is  
polyethylene-terephthalate (PET, m.p. 230°C )  
and whose sheath is polyethylene (PE, m.p. 135°C )

Fiber Diameter: 2.7 (DTEX) Basis Weight: 30 g/m<sup>2</sup>

Method of Manufacture: Airthrough

## (2) Making of Diaper

An absorbent core having a high absorption polymer dispersed in pulp fibers was placed on a backsheet whose central portion is twisted, and the obtained topsheet 2A is arranged on the absorbent core such that its liquid shut-off region is located outside the absorbent core at an end portion on the stomach side of the diaper. Thereafter, a hydrophobic sheet having an elastic member was fixed to the end portion on the stomach side such that its basal end is located on the end portion of the absorbent core, and a prescribed leg portion elastic member was arranged on each of the opposite left and right side portions in the longitudinal direction of the diaper. By doing so, a diaper was obtained.

### [Example 2]

A diaper was manufactured in the same manner as the embodiment 1 except that a liquid shut-off region was formed by changing (or resetting) the seal temperature for the heat seal to 180 °C. When the seal temperature was changed to 140 °C, the liquid shut-off region could not be formed. When the seal temperature was changed to 200 °C, the base material strength (adequate processing suitability) was lowered and therefore, no diaper was manufactured.

### [Example 3]

A diaper was manufactured in the same manner as the embodiment 1 except that the nonwoven fabric is change to another nonwoven fabric having the under-mentioned constitution and the seal temperature was changed to 140°C.

Constitution of Nonwoven Fabric: nonwoven fabric of a dual structure

Upper Layer: fiber-based 3.3 (DTEX), fiber length 51 (mm)

basis weight 15 (g/m<sup>2</sup>)

Lower Layer: fiber-based 5.5 (DTEX), fiber length 51 (mm)

basis weight 15 (g/m<sup>2</sup>)

Fiber Composition of Upper and Lower Layers:

fiber of a core-sheath structure whose core is  
polypropylene (PP. m.p. 160°C )

and whose sheath is polyethylene (PE, m.p. 130°C)

Method of Manufacture: Airthrough

[Example 4]

A diaper was manufactured in the same manner as the embodiment 3 except that a liquid shut-off region was formed by changing the seal temperature for the heat seal to 160 °C. When the seal temperature was changed to 120 °C, the liquid shut-off region could not be formed. When the seal temperature was changed to 180 °C, the base material strength (adequate processing suitability) was lowered and therefore, no diaper was manufactured.

[Comparative Example 1]

A diaper was manufactured in the same manner as the embodiment 1 except that the nonwoven fabric of the embodiment 1 was used without being subjected to heat sealing.

[Performance Evaluation: Easy leak from the stomach side]

Easy leak from the stomach side was evaluated in the under-mentioned manner with respect to the diapers obtained in the embodiments and in the comparative embodiment. That is to say, thirty pieces of the obtained diapers were distributed to each of 10 monitors and the number of the diapers in which the leak occurred from the stomach side, was counted. The number of the diapers in which the leak occurred from the stomach side (stomach-side leak number) was set to the total number which the ten monitors handled or used. The result is shown in Table 1.

Table 1 shows the heat seal temperature together with the results of evaluation, which was carried out in the under-mentioned manner, with respect to the restraining effect of oozing in the topsheet (the effect for preventing the migration of a body liquid through the interior of the topsheet) and the base material strength (adequate processing suitability).

[Restraining Effect of Oozing]

A sheet material for forming an upstanding gather, a topsheet and a backsheet were composited in this order through an adhesive agent (5 g/m<sup>2</sup>) and placed on an



inclination plate of 10 degrees. A colored water of 10 ml was dropped on the topsheet and it was observed how the liquid penetrates through the interior of the topsheet. When the oozing was stopped at the liquid shut-off region, it was indicated by ◎, when there was observed some traces of oozing at the seal portion but no liquid was leaked outside, it was by ⊙, and when the liquid oozing was not stopped, it was indicated by ×.

[Base Material Strength (Adequate Processing Suitability)]

A nonwoven fabric was cut having 100 mm in the longitudinal direction and 50 mm in width and subjected to a tensile test under the condition of 300 mm/min in rate of pulling using a Tensilon tensile test machine. Those having 30N or more on average of five pieces (or sheets) were indicated by ○.

Table 1

	Heat-seal temperature (°C)	Restraining effect of oozing	Base material strength (Adequate processing suitability)	Leak occurred from the stomach side (Number)
Example 1	160	○	○	4
Example 2	180	◎	○	3
Example 3	140	○	○	3
Example 4	160	◎	○	4
Comparative Example 1	-	×	○	9

It will be appreciated, as apparent from Table 1, that the disposable diapers (invented articles) of the respective embodiments, when compared with those of the comparative embodiment, are extensively reduced in number of the diapers in which the leak occurred from the stomach side and are excellent in anti-leak performance.

INDUSTRIAL APPLICABILITY

The absorbent article of the present invention is excellent in workability and anti-leak property, capable of exhibiting a sufficient anti-leak effect even in the case where a bulky topsheet is used, good in productivity and capable of being manufactured at a low cost. In particular, excellent anti-leak property can be exhibited only by processing the

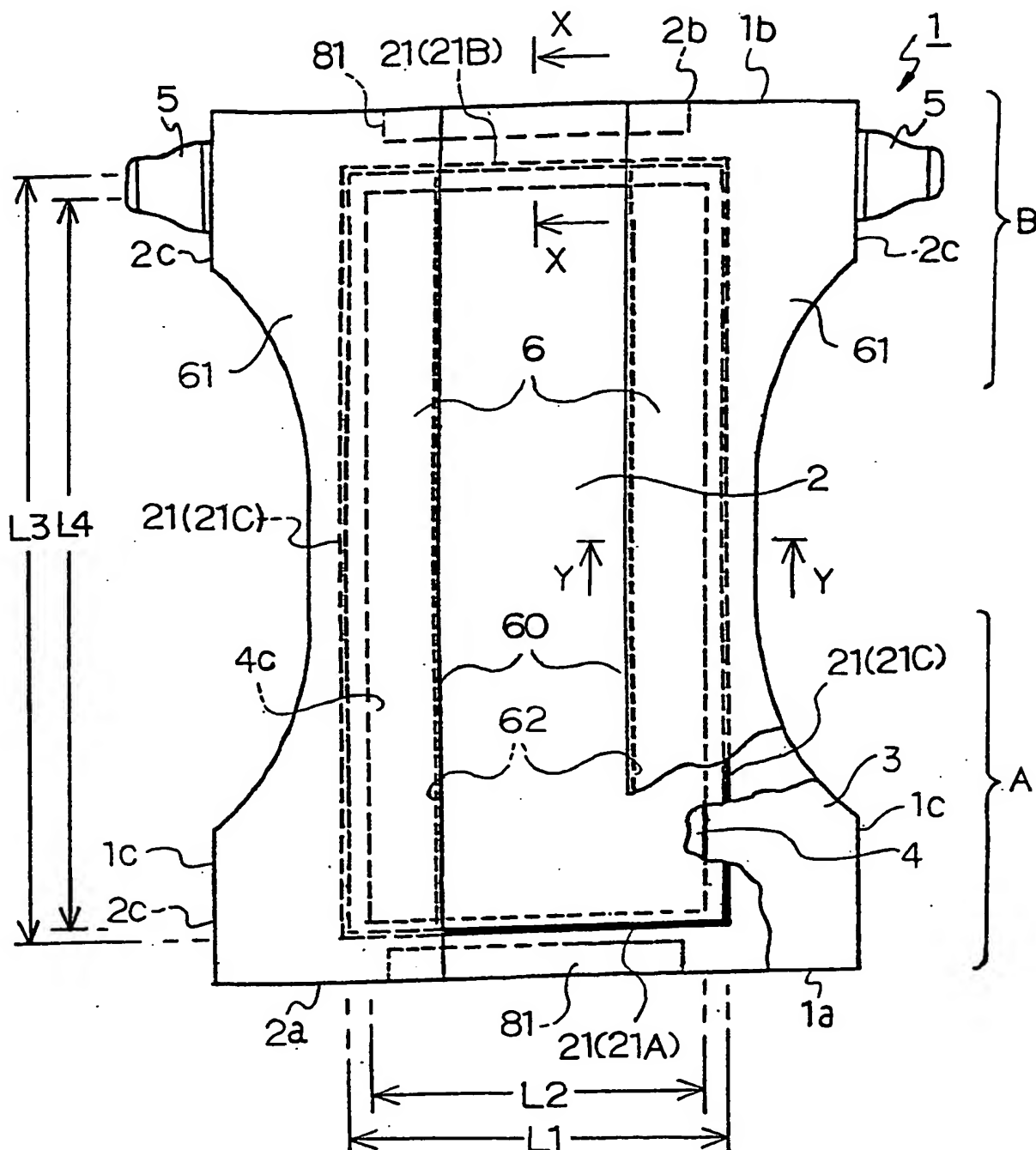
topsheet without using plural sheets, so that the absorbent article of the present invention can be manufactured efficiently and at a low cost.

## CLAIMS

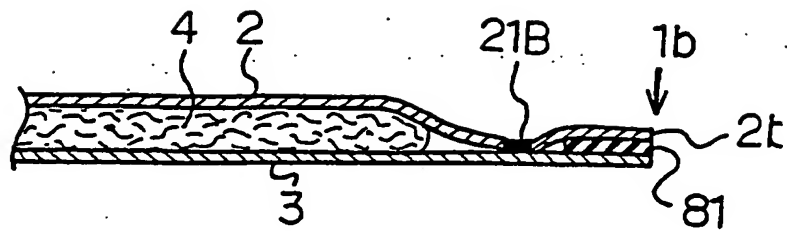
1. An absorbent article including a liquid-permeable topsheet, a liquid-impermeable backsheet and a liquid-retentive absorbent core interposed between said topsheet and said backsheet, said absorbent article being substantially vertically elongated and having  
5 an upstanding gather,  
wherein said topsheet has a liquid shut-off region in a linear shape which prevents liquid migration within said topsheet, and said liquid shut-off region is located at an area outside the periphery of said absorbent core and is formed independent of a joined section between said topsheet and a sheet material for forming said upstanding gather.
- 10 2. The absorbent article according to claim 1, wherein said topsheet extends outward beyond a basal end of said upstanding gather, at least a part of the extended section of said topsheet is joined to said backsheet, and said liquid shut-off region is located on the extended section of said topsheet.
- 15 3. The absorbent article according to claim 1, wherein said topsheet comprises a thermally fusible material, and said liquid shut-off region is formed by melting said thermally fusible material.
4. The absorbent article according to claim 3, wherein said topsheet is not thermally bonded to other sheet materials at said liquid shut-off region.
- 20 5. The absorbent article according to claim 4, wherein said liquid shut-off region is located over the widthwise direction of said absorbent article at both or one of the longitudinal end portions of said absorbent article.
- 25 6. The absorbent article according to claim 1, wherein said article does not have said upstanding gather at both or one of the longitudinal end portions of said article, and said liquid shut-off region is located over the widthwise direction of said article at the longitudinal end portion(s) where said upstanding gather is not located.

7. A method for manufacturing an absorbent article including a liquid permeable topsheet, a liquid impermeable backsheet and a liquid-retentive absorbent core interposed between said topsheet and said backsheet, said topsheet having a liquid shut-off region in a linear shape for preventing liquid migration within said topsheet,  
5 said method comprising preliminarily forming said liquid shut-off region at said topsheet and then arranging said topsheet at a predetermined location of said absorbent article.

Fig. 1



**Fig. 2**



**Fig. 3**

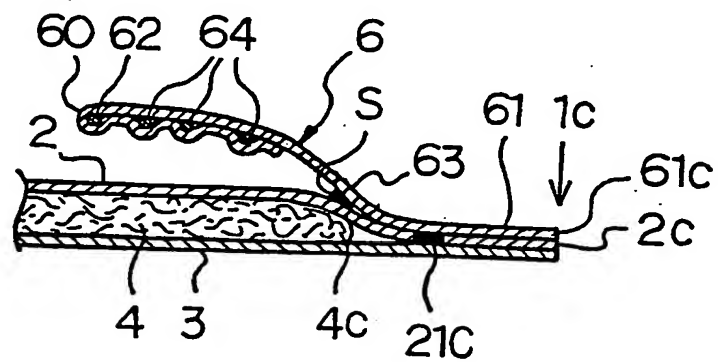


Fig. 4

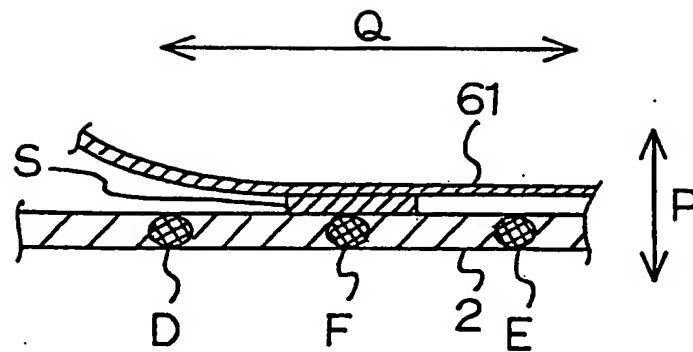


Fig. 5(a)

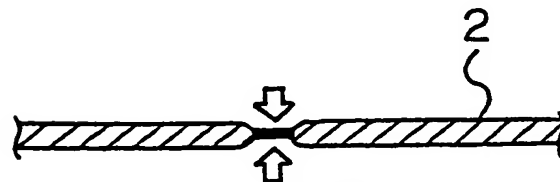


Fig. 5(b)

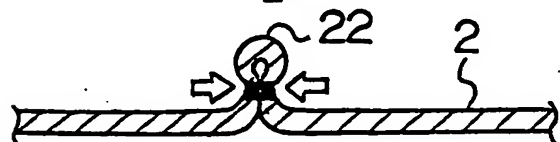


Fig. 6

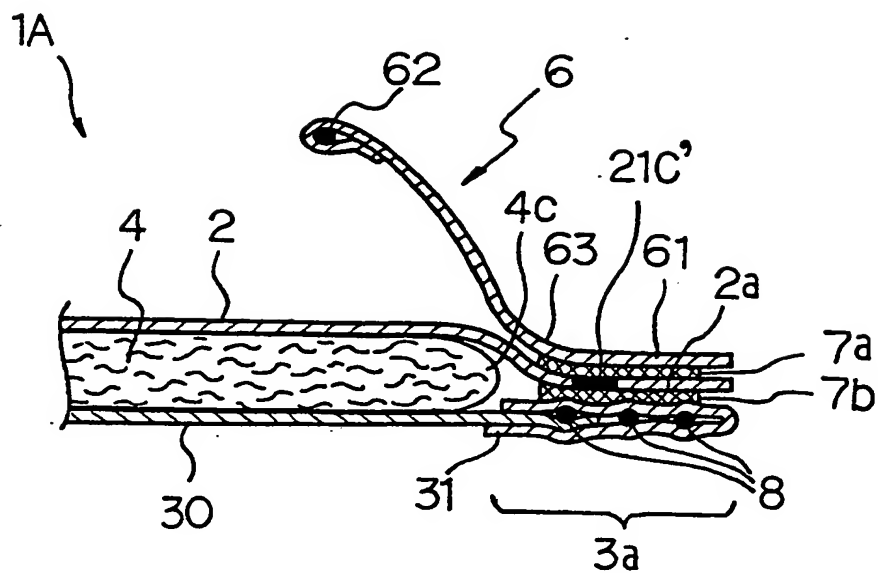
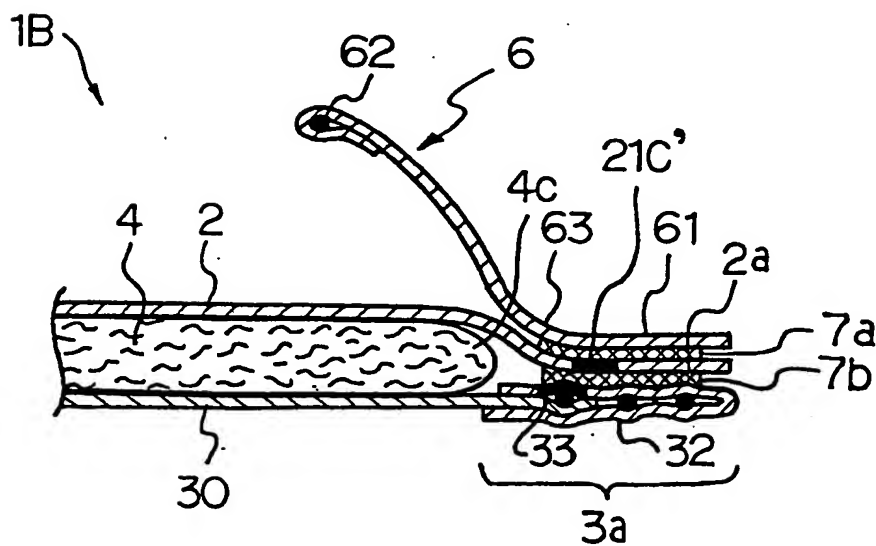


Fig. 7



# INTERNATIONAL SEARCH REPORT

Int. Application No  
PCT/EP 00/07754

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 A61F13/494

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 A61F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

31 January 2001

Date of mailing of the international search report

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# INTERNATIONAL SEARCH REPORT

Int. Application No

PCT/ 00/07754

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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